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December 11, 1992

Washington Department of Ecology
Northwest Regional Office
3190 - 160th Avenue Southeast
Bellevue, Washington 98008-5452

Attention: Mr. John Storman

Transmittal Letter
UST Closure Report and
Subsurface Investigations
Alaska Marine Lines Facility
7100 2nd Avenue
Seattle, Washington
D&M Job No.: 21048-006-005

Dear Mr. Storman:

Please find enclosed several reports regarding subsurface investigations conducted at the above-referenced site. This work was conducted on behalf of Alaska Marine Lines to address the closure of a 10,000-gallon gasoline and a 10,000-gallon diesel underground storage tanks (USTs). The reports include:

- Tank Tightness Tests conducted by B & C Equipment Company, April, 1990;
- Soil Vapor Survey conducted by Dames & Moore, September, 1990;
- Soil and Ground-Water Assessment conducted by Dames & Moore, March, 1991;
- UST Site Assessment conducted by Dames & Moore, March, 1991; and,
- Fourth Quarterly Sampling Event and Annual Monitoring Report conducted by Dames & Moore, November, 1992.

As a result of recent discussions with Department of Ecology (Ecology) representatives, it is our understanding that several of the earlier reports were forwarded directly to Ecology's facility located in Olympia, Washington. Thus, copies of the earlier as well as recent reports documenting the site activities are enclosed for your review.

Dames & Moore services associated with the subsurface investigations were conducted as an Independent Cleanup Action in general accordance with the requirements and guidelines specified in the Washington State

Department of Ecology, Model Toxic Control Act (MTCA) Section 173-340-510 and Ecology's guidance documents for UST assessments and remediation (Ecology, February, 1991 and July, 1991).

As a result of Alaska Marine Lines' UST monitoring program, the two USTs were subjected to tank integrity testing in April, 1990. The test revealed a potential for leakage from the two on-site USTs. Consequently, Dames & Moore was contracted to perform several phases of subsurface investigations to further evaluate the presence and extent of petroleum hydrocarbons in soils and/or groundwater.

In January, 1991, the two 10,000-gallon USTs were removed from the subject property and evidence of soil and ground-water degradation by petroleum hydrocarbons was observed. Prior to the UST removal, a soil vapor survey and multiple exploratory soil borings and ground-water monitoring wells were completed in the vicinity of the USTs and throughout the site.

In general, analytical results for the soil vapor survey indicated total petroleum hydrocarbon (TPH) concentrations ranging from less than detection limits to 100 parts per million (ppm). Analytical results for selected soil samples indicated TPH concentrations ranging from 207 mg/kg to 3,600 mg/kg. The distribution of TPH concentrations across the site varies significantly.

Analytical results for ground-water samples indicated TPH concentrations ranging from 0.33 mg/l to 0.59 mg/l. In addition, elevated benzene concentrations were reported in two monitoring wells ranging from 420 ug/l to 4,200 ug/l over two sampling periods. Although elevated benzene concentrations exceeded the MTCA Method A cleanup levels in two wells, several monitoring wells located in close proximity to the two former 10,000-gallon USTs indicated benzene concentrations were not detected above the given detection limit (less than 1.0 ug/l).

Based on the TPH and benzene distribution in soils and groundwater across the site, we concluded that presence of TPH and benzene concentrations is likely associated with historical land use and not necessarily with leakage from the two 10,000-gallon USTs.

In order to further monitor the ground-water quality, Dames & Moore initiated a quarterly ground-water monitoring program at the subject property. Ground-water analytical results indicated that benzene concentrations have remained relatively consistent in the groundwater in the vicinity of the former USTs and evidence of ground-water degradation migrating towards the Duwamish was not observed.

Under the current site conditions, no immediate risk to the environment or to human health appears to exists due to the limited extent of benzene in groundwater beneath the site. However, we recognize that a potential risk may occur if the residual benzene and TPH discharge into the neighboring Duwamish at present concentrations. We also recognize that natural attenuation processes may be occurring which could act to reduce

residual benzene and TPH concentrations in groundwater prior to reaching the Duwamish. Based on these observations, we recommend continual quarterly monitoring of benzene and TPH for period of one year.

Following review of the enclosed reports, please provide us with your comments in writing in order that we may convey your response to Alaska Marine Lines as well as adjust our field program accordingly. Please do not hesitate to contact us if you have any questions or require additional information.

Respectfully submitted,

DAMES & MOORE, INC.

Ingrid M. Williams

Ingrid M. Williams
Project Manager

cc:
Mr. Bob Strong: Lynden Incorporated
Mr. Bill Troy: Alaska Marine Lines